

PATENT

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UNITED STATES PATENT APPLICATION

FOR

DECORATIVE TEXTURIZED FABRIC

BY

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permit the production of large, intricate designs. Jacquard weaving systems are very complicated and provide the ability to control the action of each warp thread during the passage of a single pick. Jacquard weaving is used to create tapestry, brocade, damask, and the like.

5 Unfortunately, fabrics produced on a jacquard weaving system and other similar fabrics containing textured patterns can be relatively expensive to produce. As such, a need currently exists for an inexpensive alternative to producing fabrics having a textured pattern. A need also exists for a textured pattern having a unique appearance in
10 comparison to conventional fabrics.

SUMMARY OF THE INVENTION

The present invention is generally directed to a decorative fabric product and to a process for making the product. Fabric products made in accordance with the present invention have a distinctive and aesthetic textured pattern. The fabrics are well suited for uses in many diverse applications, such as being used in the home furnishings field.

In one embodiment, the process for producing the fabric product includes the steps of providing a fabric substrate having a face side and a back side. The fabric substrate contains a first yarn that is nappable from the face side of the fabric substrate. A size composition is applied to the face side of the fabric substrate according to a particular pattern such that the face side includes size treated areas and untreated areas.

The size composition can include, for instance, a copolyester, a starch or a polyvinyl alcohol.

After the size composition is applied to the face side of the fabric, the face side is then napped using a napping device. During napping, the first yarn is napped in the untreated areas creating a fabric product having a textured pattern. If desired, once the fabric is napped, the size composition can be removed from the fabric substrate. For example, the fabric can be scoured in order to remove the size composition. Subsequently, the fabric can be dyed.

10 In one embodiment, the fabric substrate is a warp knitted fabric. The warp knitted fabric can contain at least two yarns. The first yarn can have a denier that is greater than the second yarn. The first yarn can predominantly form the face side of the fabric. For example, the first yarn can be a multifilament polyester yarn having a denier of from about 15 50 to about 200. The first yarn can be knitted into the fabric substrate in a manner that forms from about 14 to about 40 knitted rows per inch.

The second yarn, on the other hand, can be a monofilament polyester yarn. The second yarn can be knitted into the fabric substrate according to a chain stitch notation for providing integrity substrate.

20 The size composition can be applied to the face side of the fabric substrate in various manners. For instance, the size composition can be sprayed onto the fabric or printed onto the fabric. Printing the size

composition onto the fabric allows the size composition to be applied to the fabric in particular discrete areas.

Besides the above process, the present invention is also directed to a fabric product having a textured surface. In one embodiment, the fabric product includes a warp knitted fabric containing at least a first yarn and a second yarn. The warp knitted fabric has a face surface and a back surface. The fabric is formed in a manner such that the face surface is predominantly comprised of the first yarn. For instance, the first yarn can be knitted into the fabric so as to form knitted rows visible from the face side. For example, the first yarn can form from about 14 to about 40 knitted rows per inch.

In accordance with the present invention, the warp knitted fabric is subjected to a napping process that selectively naps the first yarn from the face surface to form a textured pattern. In order to form the textured pattern, a size solution can be applied to the fabric prior to the napping process. The size solution prevents the first yarn from being napped from the surface thus allowing for a textured pattern to be formed.

Other features and aspects of the present invention are discussed in more detail below.

BRIEF DESCRIPTION OF THE DRAWINGS

A full and enabling disclosure of the present invention, including the best mode thereof, directed to one of ordinary skill in the art, is set

forth more particularly in the remainder of the specification, which makes reference to the appended figures in which:

Figure 1 is a magnified plan view of a fabric made in accordance with the present invention;

5 Figure 2 is a further magnified plan view of the fabric shown in Figure 1.

Repeat use of reference characters in the present specification and drawings is intended to represent same or analogous features of the invention.

10 **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

It is to be understood by one of ordinary skill in the art that the present discussion is a description of exemplary embodiments only, and is not intended as limiting the broader aspects of the present invention, which broader aspects are embodied in the exemplary constructions.

15 The present invention is generally directed to a decorative fabric having an aesthetic appearance. In particular, the fabric of the present invention includes a texturized pattern produced through a napping process. The fabric has many useful and diverse applications. For instance, the fabric is well suited to being used in the home furnishings
20 field such as an upholstery fabric or as a fabric used to make curtains and the like. Of particular benefit, the fabric of the present invention is

the fabric, or the face surface of the fabric refers to the side of the fabric that includes a textured pattern made according to the present invention and is intended to be the decorative side of the fabric. The first yarn is knitted into the fabric in multiple rows. For instance, the first yarn can be
5 knitted into the fabric using a bar having from about 14 needles per inch to about 40 needles per inch and, in one embodiment, having 32 needles per inch which forms a corresponding number of rows.

The course density of the first yarn can vary widely from about 20 courses per inch to about 60 courses per inch, and particularly from
10 about 40 courses per inch to about 50 courses per inch.

The first yarn can be made from various materials, such as polyester. In one embodiment, the yarn can be a multifilament yarn having a denier of from about 50 to about 200. For example, in one
15 embodiment, a 70 denier bright trilobal flat yarn can be used made from about 36 filaments.

The stitch that is used for the first yarn can also vary. In one embodiment, a 1, 0/3, 4 pattern notation can be used.

The second yarn used to form the warp knitted fabric generally forms the back of the fabric opposite the face side. In one embodiment,
20 the second yarn can be chain stitched during formation of the fabric. For example, the chain stitch can have a 1, 0/1, 0 closed chain stitch notation.

Similar to the first yarn, various different yarns can be used as the second yarn to form the fabric without limitation. In one embodiment, the second yarn can be a monofilament polyester yarn. The yarn can have a denier of from about 10 to about 50, such as a denier of about 20.

5 Once the fabric is formed, a size composition is then applied to the fabric according to a predetermined pattern. For instance, the size composition can be printed onto the fabric. For example, in one embodiment, a Stork PD-3 rotary screen printer can be used. The size composition is applied to the fabric where it is desired for the fabric not to
10 be napped.

 Various designs can be applied to the fabric as desired. For instance, the size composition can be printed onto the fabric to form flowers, animals, designs, logos, and the like. Alternatively, the size composition can be applied to the fabric according to a geometric pattern
15 or according to an abstract pattern that has the appearance of being random.

 Any suitable size composition can be used in accordance with the present invention. More particularly, a size composition should be used that is capable of being printed and that will render a fabric resistant to
20 napping. Examples of size compositions include copolyester compositions, starch compositions or polyvinyl alcohol compositions.

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5 the following:

After the size composition is applied to the fabric, the composition should be dried. For example, the fabric can be applied to a tenter frame and fed through the printing device. After printing, the fabric can then be processed through an oven at a temperature of about 390 degrees F for a time sufficient for the size composition to dry.

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sized. The size composition, however, renders the fabric resistant to napping and allows the fabric to maintain a smooth surface.

Where the size composition has not been applied to the fabric, however, the napping process creates a downy surface or nap that
5 provides contrast to the areas where the size has been applied.

After napping, the size is removed from the fabric and the fabric can be dyed if desired. For instance, in one embodiment, the fabric can be loaded onto a beam dye machine. Once wound onto a beam, hot water is pumped through the beam which removes the size. In one
10 embodiment, a detergent, such as a non-ionic detergent can be added to the water pumped through the beam. The detergent can be added in an amount up to about 1 percent by weight, such as from about 0.2 percent to about 0.5 percent. The temperature of the water fed through the beam will vary depending upon the size composition. In one
15 embodiment, the water is at a temperature of 190 degrees F.

Hot water is circulated through the beam until the size is completely removed. Once the size is removed, the hot water can be replaced with a dye and the fabric can be dyed.

After being scoured to remove the size and dyed, the fabric can
20 be placed on a tenter frame and heat set. For example, in one embodiment, the fabric can be fed through an oven set at a temperature of about 380 degrees F.

Referring to Figures 1 and 2, one embodiment of a fabric generally 10 made in accordance with the present invention is illustrated. As shown, fabric 10 is a warp knitted fabric containing rows of stitches 12 made from the first yarn.

5 In accordance with the present invention, the fabric further includes texturized or nap areas 14 and smooth areas 16. The smooth areas 16 are located where the size composition was applied. As shown, a striking contrast in texture is formed between the two areas. In this manner, many distinctive designs can be formed into the fabric for
10 increasing the aesthetic appeal of the fabric.

 These and other modifications and variations to the present invention may be practiced by those of ordinary skill in the art, without departing from the spirit and scope of the present invention. In addition, it should be understood that aspects of the various embodiments may be
15 interchanged both in whole or in part. Furthermore, those of ordinary skill in the art will appreciate that the foregoing description is by way of example only, and is not intended to limit the invention.